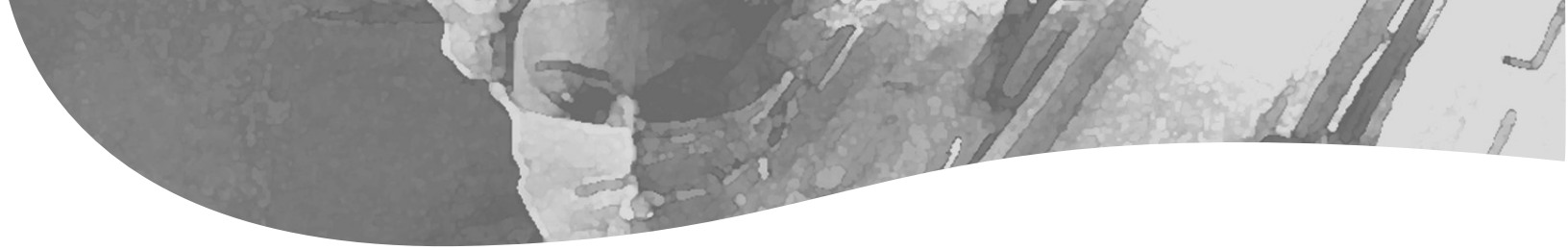

Valleylab™

User's Guide

RapidVac™

Smoke Evacuator System

Foreword

This manual and the equipment it describes are for use only by qualified medical professionals trained in the particular technique and surgical procedure to be performed. It is intended as a guide for using the RapidVAc Smoke Evacuator only. Additional users information is available in the ***RapidVac™ Smoke Evacuator Service Manual***.

Caution

Federal (USA) law restricts this device to sale by or on the order of a physician.

Equipment covered in this manual
RapidVac Smoke Evacuator—110 V and 220 V

Part Number: 1008878
Effective Date: May 2008

Trademark acknowledgements

RapidVac™ is a trademark of Valleylab. All trade names referenced are the trademarks, registered trademarks, or products of their respective manufacturers.

Manufactured for:

Valleylab, a division of Tyco Healthcare Group LP
Boulder, Colorado 80301-3299 USA

European representative

Tyco Healthcare UK Ltd.
Gosport, PO13 0AS, UK

Device is compliant with the European Communities Council Directive 93/42/EEC, Medical Device Directive.

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Warranty

Valleylab, a division of Tyco Healthcare Group LP, warrants each product manufactured by it to be free from defects in material and workmanship under normal use and service for the period(s) set forth below. Valleylab's obligation under this warranty is limited to the repair or replacement, at its sole option, of any product, or part thereof, which has been returned to it or its Distributor within the applicable time period shown below after delivery of the product to the original purchaser, and which examination discloses, to Valleylab's satisfaction, that the product is defective. This warranty does not apply to any product, or part thereof, which has been repaired or altered outside Valleylab's factory in a way so as, in Valleylab's judgment, to affect its stability or reliability, or which has been subjected to misuse, neglect, or accident.

The warranty periods for Valleylab products are as follows:

Microwave Ablation Generator	One year from date of shipment
Microwave Ablation Pump	One year from date of shipment
Electrosurgical Generators	One year from date of shipment
RFG-3C™ Plus Lesion Generator	One year from date of shipment
LigaSure™ Vessel Sealing System	One year from date of shipment
LigaSure™ Reusable Instruments	One year from date of shipment
Mounting Fixtures (all models)	One year from date of shipment
Footswitches (all models)	One year from date of shipment
Force Argon™ Units	One year from date of shipment
RapidVac Smoke Evacuator	One year from date of shipment
LigaSure™ Sterile Single Use Items	Sterility only as stated on packaging
Sterile Single Use Items	Sterility only as stated on packaging
Patient Return Electrodes	Shelf life only as stated on packaging
MWA Antennas	Shelf life only as stated on packaging

This warranty is in lieu of all other warranties, express or implied, including without limitation, the warranties of merchantability and fitness for a particular purpose, and of all other obligations or liabilities on the part of Valleylab. Valleylab neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale or use of any of Valleylab's products.

Notwithstanding any other provision herein or in any other document or communication, Valleylab's liability with respect to this agreement and products sold hereunder shall be limited to the aggregate purchase price for the goods sold by Valleylab to the customer. There are no warranties which extend beyond the terms hereof. Valleylab disclaims any liability hereunder or elsewhere in connection with the sale of this product, for indirect or consequential damages.

This warranty and the rights and obligations hereunder shall be construed under and governed by the laws of the State of Colorado, USA. The sole forum for resolving disputes arising under or relating in any way to this warranty is the District Court of the County of Boulder, State of Colorado, USA.

Valleylab, its dealers, and representatives reserve the right to make changes in equipment built and/or sold by them at any time without incurring any obligation to make the same or similar changes on equipment previously built and/or sold by them.

Conventions Used in this Guide

Warning

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution

Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

Notice

Indicates a hazard that may result in product damage.

Important

Indicates an operating tip or maintenance suggestion.

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Chapter 1

Introducing the RapidVac Smoke Evacuator

This section describes the clinical applications and features of the RapidVac Smoke Evacuator.

Caution
Read all warnings, cautions, and instructions provided with this smoke evacuator before using.
Read the instructions, warnings, and cautions provided with electrosurgical accessories before using. Specific instructions are not included in this manual.

Parts Shipped with the Smoke Evacuator

When unpacking the smoke evacuator, verify that the following parts are included:

- Power cord
- User's guide and service manual
- Quick reference card

Upon initial receipt, inspect the smoke evacuator for dents, cracks, or damage that may have occurred during shipment. If damage is present, notify the freight carrier for assessment.

Additional items are available from Valleylab:

- Replacement RapidVac Filters
- RapidVac Footswitch
- RapidVac Remote Switch Activator
- Generator Interlink Cable
- Laparoscopic Smoke Evacuator Tubing Kit
- Hoses, tubing, adapters, wands and other accessories

About the RapidVac Smoke Evacuator

The RapidVac Smoke Evacuator captures particulates and adsorbs gases from surgical smoke. The smoke evacuator is specifically designed to improve visibility and reduce potential health hazards associated with surgical smoke. It can be used in both open and laparoscopic procedures.

The RapidVac Smoke Evacuator is designed with a high suction, high flow rate centrifugal action pump. The ultra-quiet motor is used to draw the smoke from the surgical site through the vacuum tubing and into the system where it is processed by a series of filters. A single disposable filter is used to simplify the installation and removal during filter changes. The filter is completely enclosed to protect the healthcare personnel from potential contamination during filter changes.

One SEA3700 Filter contains four filtration stages to capture the smoke plume:

- **Stage 1** - A prefilter that traps and removes gross particulate and incidental fluid.
- **Stage 2** - An ULPA grade (Ultra Low Penetration Air) patented filter captures particulates and micro-organisms down to 0.1 µm at 99.9995% efficiency.
- **Stage 3** - The highest grade virgin activated carbon, designed specifically for Valleylab for the removal and adsorption of odors and toxic gases produced by burning tissue. These harmful gases may constitute a health hazard to healthcare professionals who are subjected to prolonged exposure. The activated carbon used in the smoke evacuation system preferentially removes toxic organic gases (rather than water vapor) and provides optimal odor removal.

- **Stage 4 -** An expanded foam used to trap activated carbon fines from migrating out of the filter.

Features

RapidVac Smoke Evacuator features include:

- Filter-life monitoring for its four-stage, 25-five hour filter
- Standby, RapidVac+, footswitch, or continuous operation modes
- Quiet operation
- Adjustable flow
- Compatibility with all Valleylab electrosurgery pencils and generators

RapidVac+ System

The RapidVac Smoke Evacuator incorporates The RapidVac+ mode which controls the flow of the smoke evacuator when using a Valleylab electrosurgical pencil. When the electrosurgical pencil is activated, the smoke evacuator operates in the preselected flow setting. When the pencil is deactivated, the air flow reduces to a low-flow purge setting.

Two Valleylab accessories link the electrosurgical generator and smoke evacuator to enable the RapidVac+ mode:

- RapidVac Remote Switch Activator
- Generator Interlink Cable

Operating Modes

Four operating modes are available: standby, footswitch, RapidVac+, and continuous.

- *Standby* mode powers up the unit without activating the motor or vacuum flow.
- *Footswitch* mode is used to turn the smoke evacuator on or off with the optional footswitch pedal.
- *RapidVac+* mode is used to control the vacuum flow simultaneously with activation of an electrosurgical pencil. This mode is controlled with the optional generator interlink or electrosurgery sensor.
- *Continuous* mode is used to operate the smoke evacuator using continuous air flow.

Power

This unit is equipped from the factory with either a 110 VAC hospital grade NEMA 5-15 power cord or a 220 VAC CEE7/7 power cord. Should the AC power cord need replacing to match another plug configuration, the replacement plug/cable/receptacle configuration must meet or exceed the following specifications.

100-120 VAC

Cable - SJT16/3, IEC color code, maximum length 15 ft. (5m)
Plug - minimum 10A 125 VAC
Unit receptacle - IEC female, minimum 10A 125 VAC

220-240 VAC

Cable - H05VVF3G1.0 VDE, maximum length 15 ft. (5m)
Plug - minimum 6A 250 VAC
Unit receptacle - IEC female, minimum 6A 250 VAC

Operating Parameters

Ambient temperature range	10° C to 40° C (50° F to 104° F)
Relative humidity	30% to 75%, noncondensing

Transport and Storage

Ambient temperature range	-34° C to 65° C (-29° F to 149° F)
Relative humidity	25% to 85%, noncondensing

Patient and Operating Room Safety

General

Warning

Only trained personnel are to operate the RapidVac Smoke Evacuator. Operators should avail themselves of preclinical training, a review of pertinent literature, and other appropriate education before attempting to use the RapidVac.

During initial set up, inspect the smoke evacuator for any damage that may have been caused during shipping. If damaged, do not use or attempt to repair. Call Valleylab for service assistance.

Warning
Inspect the smoke evacuator before each use. If there is evidence of damage, do not use the smoke evacuator. Call Valleylab for service assistance.
The RapidVac Smoke Evacuator filter is a disposable component that captures potentially hazardous particles. Handle used filters as you would any biohazardous material. Dispose of used filters according to your local codes and regulations, and follow your institutions procedures for disposal.
The smoke evacuation filter has a life of approximately 25 hours of use and should not be used beyond the specified time. If the Replace Filter indicator illuminates during operation, the smoke evacuator will continue to run until it is turned off. Turning power off to the smoke evacuator will require replacement of the filter before subsequent use.
Failure to change the filter accordingly may result in decreased efficiency in smoke evacuation and contamination of the motor, vacuum pump, and sound absorbing media within the smoke evacuator.
Do not operate this device in potentially explosive environments, such as in the presence of flammable anesthetics.
Refer routine servicing to qualified biomedical technical personnel.
Use only with the power cord provided and always plug into a grounded outlet.
Do not use two- or three-prong adapters with the smoke evacuator’s power cords.
The power-cord assembly should be checked periodically for damaged insulation or connectors. Do not use damaged cords.
Use of extension cords may result in fire hazards.
This device is not intended for the evacuation of fluid. If fluid is expected to be aspirated to the smoke evacuation filter, a fluid collection device must be installed with the vacuum hose assembly. Failure to install a fluid collection device could cause filter blockage and electrical damage. Contact Valleylab Service for additional information.
Do not connect a wet power cord to the wall receptacle.
If the smoke evacuator becomes wet, either from a leaking tube or from being sprayed, unplug the smoke evacuator from the Mains outlet. Wipe dry or allow to air dry before proceeding.
Connect the smoke evacuator power cord to a properly grounded receptacle. Plug the power cord directly into the power receptacle without any adapter plugs. Use of power plug adapters may result in electric shock.
Do not remove any covers or panels exposing the internal components of the smoke evacuator. Refer to a Valleylab representative for service.
The smoke evacuator produces a strong vacuum. Adjust the airflow and the position of the inlet end of the wand or tubing to prevent patient injury and to prevent suction of surgical materials and surgical specimens.

Warning

If the smoke evacuator is activated while the airflow is set to a high speed, it may produce a sudden, strong suction action. Check the airflow setting before activating the smoke evacuator to prevent patient injury and to prevent suction of surgical materials and surgical specimens.

Caution

Do not stack equipment on top of the smoke evacuator or place the smoke evacuator on top of electrical equipment. These configurations are unstable and/or do not allow for adequate cooling.

Use only Valleylab SEA3700 Filters in the RapidVac Smoke Evacuator. Filters from other manufacturers may cause damage to the system, thereby voiding the warranty.

Provide as much distance as possible between the smoke evacuator and other electronic equipment (such as monitors). An activated smoke evacuator may cause interference with them.

Read all warnings, cautions, and instructions provided with the RapidVac Smoke Evacuator before using.

To maximize patient safety, the tubing or wand should not come in direct contact with tissue. Otherwise, patient injury may result.

Do not block either the tubing or the filter. If either becomes occluded or significantly restricted, the motor/blower may overheat and cause the unit to shut down.

Care must be exercised in the installation of hoses, adapters and suction canisters. Failure to follow the procedures outlined in this manual may result in overheating of the motor and may void the unit warranty.

Notice

Using any unapproved filter or accessory with the smoke evacuator may cause damage and will void the warranty.

The RapidVac Smoke Evacuator functions properly only when the ULPA filter is correctly installed. If the filter is installed incorrectly, the amber Replace Filter indicator flashes and the Service Required indicator is illuminated.

Fluids may damage the filters. When evacuating smoke and incidental fluids, always use the appropriate tubing,

Connect the power cord to a wall receptacle having the correct voltage. Otherwise, product damage will result.

Power line voltage below 100 VAC (110V SEA3690) and 200 VAC (220V SEA3695) will significantly reduce airflow.

Connecting multiple lengths of tubing together may cause the smoke evacuator to overheat.

Notice

The RapidVac Smoke Evacuator has been specially designed to fit on Valleylab mounting carts only. Do not install the smoke evacuator on a cart other than a Valleylab cart. Installing the smoke evacuator inside a cart with improper ventilation may result in overheating or may adversely affect the stability of the cart.

Periodically check the cart brackets that hold the smoke evacuator in place to ensure that the screws are securely fastened.

Stacking the smoke evacuator on top of a generator may cause an unstable condition and/or cause the smoke evacuator to overheat.

Do not use sterile accessory products if sterile packaging has been compromised.

Maintenance

Warning

Always turn off and unplug the smoke evacuator before cleaning.

The ULPA filter captures potentially hazardous particles. Handle used filters as you would any biohazardous material. Dispose of filters with other operative waste materials according to the procedures for your institution.

Do not reuse or resterilize any product labeled “DISPOSABLE” or “SINGLE USE.” Doing so may result in cross contamination, injury to the patient or medical staff, or equipment malfunction.

Caution

Inspect the smoke evacuator before each use. If there is evidence of damage, do not use the smoke evacuator. Call Valleylab for service assistance.

Notice

Do not rub, touch, or clean the smoke evacuator with alcohol or caustic, corrosive, or abrasive cleaning or disinfectant compounds, solvents, or other materials that could scratch the control panel or damage the smoke evacuator.

Do not autoclave, pressure sterilize, or gas sterilize the smoke evacuator.

Keep the smoke evacuator away from liquids. Liquids that enter the smoke evacuator will damage internal components.

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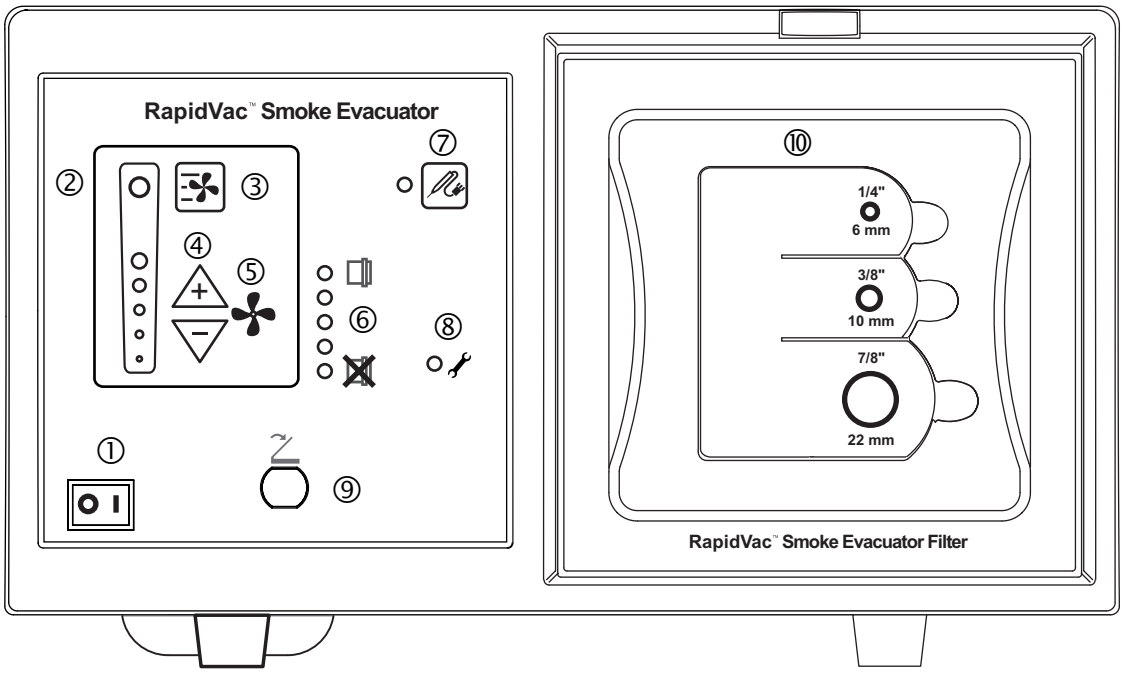
Chapter 2

Controls, Indicators, and Receptacles

This chapter describes the front and rear panels on the smoke evacuator, including all controls, indicators, receptacles, and ports.

Front Panel



① Power On/Off switch
② Air-flow indicators (LED)
③ Turbo button
④ Air-flow controls
⑤ Power on indicator (LED centered in fan symbol)
⑥ Filter life indicators (LED)
⑦ RapidVac+ button
⑧ Service required indicator (LED)
⑨ Footswitch jack
⑩ Air filter with tubing connectors

Caution

Connect accessories to the proper receptacle type. Otherwise, the smoke evacuator may not function properly.

Accessory equipment connected to interfaces must be certified according to IEC 60601-1-1. All configurations shall comply with the system standard IEC 60601-1-1. The user is responsible for verifying that accessory equipment connections comply with the system requirements of IEC 60601-1-1. If in doubt, contact Valleylab.

The electronic system controls on the RapidVac Smoke Evacuator are easy to understand and simple to use. The control panel contains power and suction controls, LED indicators, and connectors.

Notice

Please be sure to read all instructions before installing accessories or operating this equipment. Failure to do so may result in damage to the unit and/or personal injury.

Power On/Off Switch

The power switch that controls power to the RapidVac Smoke Evacuator is located in the lower-left corner of the front panel. To power up the smoke evacuator, place the power switch in the ON position (I). The smoke evacuator starts in standby (system power is on with no suction). When the smoke evacuator is on in standby, the LED in the center of the fan symbol on the front panel will blink continually until a fan speed is selected.

Turn the system power off by placing the power switch in the OFF position (O).

Air Flow Controls

The level of suction is controlled by the air-flow controls. up-arrow ( ) and down-arrow ( ) buttons. To start the fan from standby mode, press the up-arrow button. It starts in the lowest suction setting indicated by a single illuminated air-flow indicator.

The suction control should be set at the lowest practical setting to completely remove the surgical smoke from the operative site. Pressing either the up- or down-arrow buttons changes the current suction level by 20%. The selected level of suction is displayed by the air-flow indicator LEDs.

Turbo Button

When increased smoke removal is necessary, the Turbo button may be pressed at anytime to increase suction. Turbo mode effectively increases the airflow to 100% suction flow to quickly remove the smoke plume from the surgical site.

Filter Life Indicator

The filter life indicator provides a visual indication of the status of the life of the filter in use. Each illuminated LED represents five hours of remaining time on the 25-hour filter. The RapidVac Smoke Evacuator tracks the time each filter has been used allowing for an accurate display of remaining use for new or previously used filters.

Reading the Filter Life Indicator

Install an unused RapidVac filter into the system. When the smoke evacuator is on, all five of the filter life indicator LEDs illuminate indicating the new filter has 100% filter life. The indicator will regress through subsequent LEDs until the final LED is illuminated indicating less than 5 hours of filter life remaining. At one hour remaining, the LED changes to amber. When the time remaining reaches 30 minutes, the amber LED flashes slowly.

RapidVac+ Button

When the smoke evacuator is connected to a generator using the Generator Interlink Cable, pressing the RapidVac+ button synchronizes the smoke evacuator with the use of an electrosurgical pencil. When a pencil is activated, the smoke evacuator activates to a preselected air flow level.

Footswitch Jack

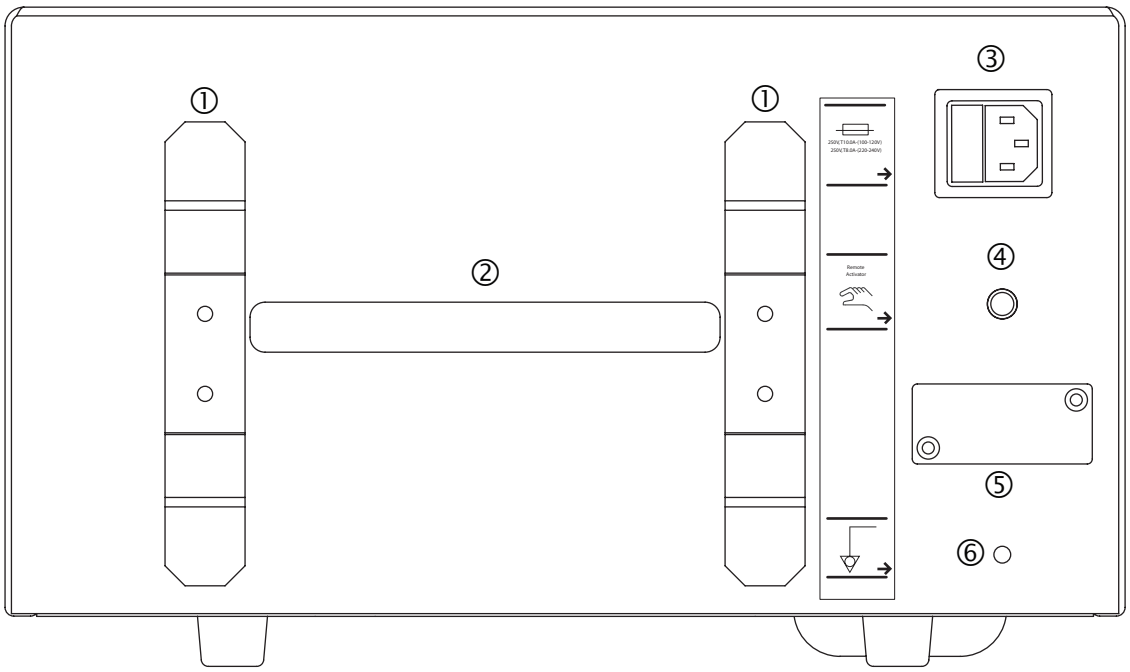
A RapidVac Footswitch (SEA3745) is available for use with the RapidVac Smoke Evacuator.

A footswitch may be added to any system by simply plugging it into the footswitch jack on the front panel. The unit may be turned on or off by depressing the footswitch pedal once for each operation. For footswitching operation, the smoke evacuator should be on and the suction level to be activated from the footswitch should be selected on the control panel.

Service Required Indicator

The motor powering the RapidVac Smoke Evacuator has two motor brushes that require regular maintenance every 500 hours. When the smoke evacuator has been in use for 500 hours, the Service Required Indicator illuminates. Replace the motor brushes and reset the Service Required Indicator as directed in the *RapidVac Smoke Evacuator Service Manual*.

Rear Panel



① Cord brackets
② Carrying handle
③ Power-cord receptacle/fuse tray
④ Remote Activator jack
⑤ EPROM jack
⑥ Equipotential grounding lug

Power Cord Receptacle/Fuse Tray

The cord receptacle provides power to the smoke evacuator using a removable cord appropriate for regional power supplies. Cord can be wound on the cord brackets to store with the smoke evacuator.

Two 10 AMP fuses in the 110V model (8 AMP for 220V) are located in a removable tray adjacent to the cord receptacle. Fuses electrically protect the system from damage and the operator from injury. If the system is overheated or if there is an electrical surge in the electrical system, fuses will open and the system will not operate. To re-start the system, unplug the power cord and replace the fuses.

Remote Activator Jack

A Generator Interlink Cable (SEA3730) and Remote Switch Activator (SEA3740) are available for the automatic remote activation of the RapidVac Smoke Evacuator.

The Generator Interlink Cable is compatible with the Valleylab Force FX™, ForceEZ™, and ForceTriad™ generators. It attaches to a generator's RF activation port and to the smoke evacuator's Remote Activator jack. When the generator is activated, the smoke evacuator automatically initiates the pre-set suction.

The Remote Switch Activator is a programmable switch that plugs into the smoke evacuator jack and is attached to an electrosurgical generator. The remote switch is programmed to recognize the audible tones used by the generator. When the tone for cut or coag sounds, the remote switch automatically initiates the pre-set suction.

EPROM Jack (Covered)

The EPROM jack located under the secured cover is to be used only by qualified Valleylab service technicians to update the smoke evacuator's software.

Equipotential Grounding Lug

The equipotential grounding lug provides an alternate rout for electrical energy back to ground when attached to an earth-ground cable.

Chapter 3

Before Surgery

This section contains procedures for:

- Periodic Inspection
- Initial installation
- Checking and testing the smoke evacuator prior to use
- Preparing for evacuation of dry smoke (open procedure)
- Preparing for evacuation of smoke and incidental fluids (open procedure)

Caution
Read all warnings, cautions, and instructions provided with this smoke evacuator before using.
Read the instructions, warnings, and cautions provided with smoke evacuator accessories before using. Specific instructions are not included in this manual.

Periodic Inspection

The RapidVac Smoke Evacuator should be visually inspected at least every year. This inspection should include checks for:

- Damage to the power cord.
- Damage to the power plug.
- Tightness of the power plug.
- Proper mating, cleanliness and absence of damage to the filter inlet.
- Obvious external or internal damage to the system.

Initial Installation

To prepare the RapidVac Smoke Evacuator for use, you must verify that the filter is installed, connect the appropriate tubing, and check the performance of the smoke evacuator indicators and controls.

Notice

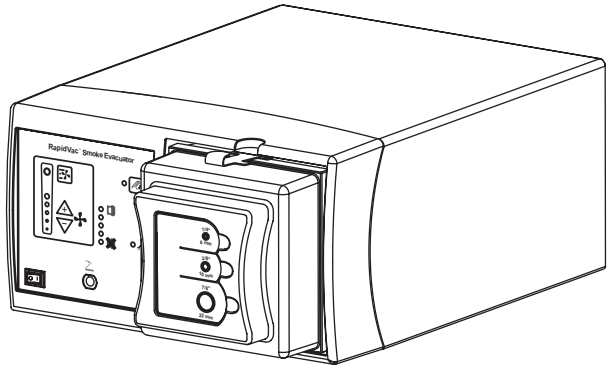
Stacking the smoke evacuator on top of a generator may cause an unstable condition and/or cause the smoke evacuator to overheat.

1. Inspect the power cord for any signs of visible damage. If it is in good condition, plug the power cord into a grounded wall receptacle.

Warning

Connect the smoke evacuator power cord to a properly grounded, hospital grade receptacle of the correct voltage. Plug the power cord directly into the power receptacle without any extension cords and/or adapter plugs.

2. Insert a RapidVac SEA3700 filter into the square opening on the right side of the smoke evacuator. Slide the filter into place until it is fully seated and the locking mechanism clicks into place.

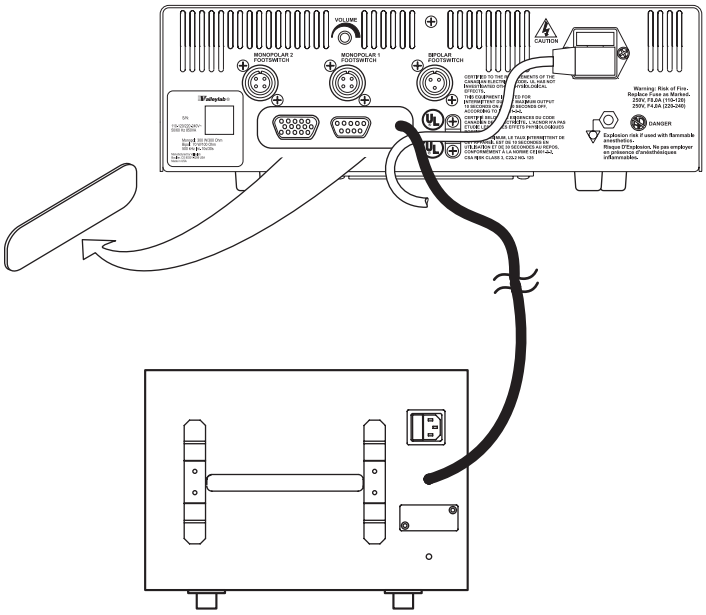


3. Turn on power to the smoke evacuator by pressing the on switch (I) located on the front panel.

4. The smoke evacuator performs a self test. Verify that all LEDs are illuminated during the test. When the test is complete, the RapidVac is placed in standby mode signified by an illuminated power on LED within the fan symbol and no active suction.

5. *(Optional)* Connect the RapidVac Remote Switch Activator (SEA3740) to the Remote Switch jack on the back panel of the smoke evacuator. Use only the RapidVac Remote Switch Activator. Other remote units are not compatible.

6. *(Optional)* Connect the Generator Interlink Cable (SEA3730) to the Remote Switch jack on the back panel of the smoke evacuator. and to the rear panel of the compatible Valleylab generator. Use only the Valleylab Interlink Cable. Other cables may not be compatible.



7. *(Optional)* Connect the RapidVac Footswitch to the front panel of the smoke evacuator. Use only Valleylab footswitches with the RapidVac Smoke Evacuator.

Checking the Smoke Evacuator

Before each use, test the following smoke evacuator components to verify performance:

- RapidVac ULPA filter
- Airflow controls
- Footswitch (as applicable)
- Remote switch activator (as applicable)
- Generator interlink (as applicable)

If the system does not respond as indicated below, refer to Chapter 6, *Troubleshooting*.

Checking the Remaining Filter Life

RapidVac Smoke Evacuator filters have a use duration of 25 hours. As a filter is used, information about the amount of time the individual filter has been used is stored on the filter's RFID tag. Whenever a new or previously used filter is inserted, the smoke evacuator reads the stored information from the tag. The remaining filter life is visually displayed by the corresponding number of filter life indicators on the smoke evacuator front panel.

1. Turn on the smoke evacuator and insert a filter.
2. Check the filter life indicators on the front panel to verify the filter has ample remaining time to complete a procedure.

Illuminated Filter Life Indicators	Remaining Use
All	25 to 20 hours
4	20 to 15 hours
3	15 to 10 hours
2	10 to 5 hours
1 (green)	5 hours to 1 hour
1 (amber)	less than 1 hour
1 (flashing amber)	less than 30 minutes

Important

Replace the filter when indicated. Failure to replace the filter may reduce airflow and compromise the efficiency of the filter.

Changing the Filter

Warning

The ULPA filter captures potentially hazardous particles. Handle used filters as you would any biohazardous material. Dispose of filters with other operative waste materials according to the procedures for your institution.

1. Remove the filter by depressing the locking tab on the top edge of the filter while pulling the filter straight out of the opening.
2. Dispose of the filter with other operative waste according to the procedures for your institution.
3. Install a new filter in the smoke evacuator as described earlier in this section.

Testing the Airflow Controls

Warning

The smoke evacuator produces a strong vacuum. Properly adjust the airflow and the position of the inlet end of the wand or tubing to prevent patient injury and to prevent suction of surgical materials and surgical specimens.

You can start, stop, and change the vacuum airflow rate when the smoke evacuator is on. Illuminated LEDs display the airflow setting. Each pressing of the up-arrow (+) or down-arrow (−) increases or decreases suction by 20%.

There are five suction flow indicator LEDs that light in succession. Turbo Mode illuminates the sixth LED next to the Turbo button.

Suction Flow	Illuminated Suction Flow Indicators
No suction (Standby Mode)	None (LED at the center of the fan symbol blinks)
20% motor speed	1
40% motor speed	2
60% motor speed	3
80% motor speed	4
100% motor speed	5
Turbo Mode (100%)	6

1. Verify that the filter is installed properly.
2. Ensure that the power cord is plugged into a hospital grade power receptacle.

3. Turn on the smoke evacuator by pressing the power on switch (|) on the lower left of the front panel. The smoke evacuator powers up with the fan motor off (standby mode). The LED in the center of the fan symbol blinks indicating power is on.
4. Press the up-arrow (+) button once to start suction at the lowest air-flow setting.
5. Press the up-arrow (+) button and pause briefly to progress to the next level of suction. Verify that the level of suction noticeably increases with each progression.
6. When all suction flow LEDs are lit steadily (100% motor speed), press the down-arrow (−) button repeatedly to regress through the settings to the lowest setting.

Installing and Testing the Footswitch *(optional)*

Only use the Valleylab Footswitch with the smoke evacuator. Other footswitches are not compatible.

1. Turn on the smoke evacuator.
2. Connect the footswitch cord to the footswitch jack on the front panel.
3. Turn on the airflow to any setting.
4. Press the footswitch once to turn off the airflow.
5. Press the footswitch again to activate the airflow.

Installing and Testing the Remote Switch Activator *(optional)*

Use the Valleylab Remote Switch Activator with any of Valleylab's electrosurgical pencils and generators.

1. Select a location on the generator near the speaker where the Remote Switch Activator is to be mounted.
2. Clean the surface of the selected area with alcohol. Allow the alcohol to evaporate.
3. Remove the backing from the gasket on the RSA.
4. Affix the RSA to the generator.
5. Plug the RSA connector into the Remote Activator jack located on the back panel of the smoke evacuator.
6. Turn on the smoke evacuator and press the up-arrow (⚠+) button twice to illuminate the first two air flow indicators (40% motor speed).
7. Set up the surgical pencil and generator as instructed in their user documentation. If the generator's audible-tone volume can be adjusted, set it at 50%.
8. Initiate programming the Remote Switch Activator by pressing the Program/Reset button continually for 10 seconds.
9. Set the generator to cut mode.
10. Activate the generator in cut mode until the smoke evacuator motor starts. Depending on the generator, this may take up to 40 seconds.
11. When the smoke evacuator motor starts, deactivate the generator in cut mode.

Important

Do not activate the generator in cut mode again until the Remote Switch Activator has been programmed in coag mode.

12. Set the generator to coag mode.
13. Activate the generator in coag mode until the smoke evacuator motor starts. Depending on the generator, this may take up to 40 seconds.
14. When the smoke evacuator motor starts, deactivate the generator in coag mode.

Important

If the generator has only one tone, program this same tone into the Remote Switch Activator memory.

If both the cut and coag tones are not activating the smoke evacuator reprogram the Remote Switch Activator. Disconnect the Remote Switch Activator from the smoke evacuator, then re-connect. Repeat the programming instructions beginning with step 8.

The Remote Switch Activator is now programmed. Powering on and off the RapidVac Smoke Evacuator is now controlled by the generator and Remote Switch Activator.

Important

If the attached smoke evacuator is to be disconnected from the generator, unplug the Remote Switch Activator from the smoke evacuator. The Remote Switch Activator should remain affixed to the generator to which it was programmed. The RapidVac Smoke Evacuator cannot be operated manually or with a footswitch while the Remote Switch Activator is plugged into the smoke evacuator.

If the Remote Switch Activator is moved to another generator, it must be reprogrammed using the steps in this section.

Installing and Testing the Generator Interlink Cable *(optional)*

The Generator Interlink Cable attaches to a RapidVac Smoke Evacuator and a compatible Valleylab generator to synchronize smoke evacuation with the activation of the generator. The cable is compatible with the Valleylab generator models Force FX™, ForceEZ™, and ForceTriad™.

1. Turn power off and unplug the smoke evacuator and generator from the power source.
2. Remove the metal cover plate in the center of the generator back panel to access optional ports.
3. Plug the interlink cable into the generator RF Activation port.
4. Plug the interlink cable into the Remote Activator jack on the back panel of the smoke evacuator.
5. Plug the generator and smoke evacuator into outlets of proper voltage.
6. Turn power on to both devices.
7. When the generator and smoke evacuator have completed their self tests, set the level of suction to be used when the smoke evacuator is activated.
8. Press press the up-arrow () button until reaching the desired pre-setting.
9. Press the RapidVac+ button.

The pre-set suction level is now selected. The smoke evacuator continues to run and suction reduces to a minimal level. Use of the surgical pencil will automatically activate the RapidVac to the pre-set suction level. When the pencil is deactivated, the smoke evacuator will return to minimal suction.

Setting Up the Smoke Evacuator

Warning

Connect the smoke evacuator power cord to a properly grounded receptacle. Plug the power cord directly into the power receptacle without any adapter plugs. Use of power plug adapters may result in electric shock.

Use of extension cords may result in fire hazards.

After the initial installation, set up the smoke evacuator for use.

Mounting the Smoke Evacuator

The smoke evacuator may be mounted in the following locations:

- The Valleylab UC8009 Universal Mounting Cart—primary, secondary, or suspended shelf
- ForceTriad Cart FT900
- Boom systems
- Stable, flat surfaces

This section describes how to set up for the following procedures:

- Open procedure—evacuating dry smoke
- Open procedure—evacuating smoke and incidental fluids

Open Procedure—Evacuating Dry Smoke

Notice

Connecting multiple lengths of tubing together may cause the smoke evacuator to overheat.

1. Verify the installed filter has enough available filter life to complete the procedure.
2. Connect your choice of tubing to the corresponding filter tubing connection.

Notice

Do not connect more than one set of tubing to the smoke evacuator filter at one time. Suction levels and air flow will be adversely affected.

Open Procedure—Evacuating Smoke and Incidental Fluids

The primary function of the smoke evacuator is to evacuate surgical smoke. A fluid canister is recommended to prevent the filters from getting wet when evacuating smoke that may contain incidental fluids.

Notice
Fluids may damage the filters. When evacuating smoke and incidental fluids, always use the appropriate tubing and fluid canister.
Check the fluid level in the canister frequently during surgery. If the fluid canister overfills, smoke evacuator damage will result.
Connecting multiple lengths of tubing together may cause the smoke evacuator to overheat.

1. Verify the installed filter has enough available filter life to complete the procedure.
2. Insert a fluid canister in-line with the smoke evacuator tubing.

Chapter 4

During Surgery

This chapter covers the following topics:

- Minimizing airflow noise
- Changing and adjusting airflow
- Checking the tubing
- Checking the prefilter
- Checking the sponge guard

Initiating Airflow

Warning

The smoke evacuator produces a strong vacuum. Adjust the airflow and the position of the inlet end of the wand or tubing to prevent patient injury and to prevent suction of surgical materials and surgical specimens.

If the smoke evacuator is activated while the airflow is set to a high speed, it may produce a sudden, strong suction action. Check the airflow setting before activating the smoke evacuator to prevent patient injury and to prevent suction of surgical materials and surgical specimens.

The smoke evacuation filter has a life of approximately 25 hours of use and should not be used beyond the specified time. If the Replace Filter indicator illuminates during operation, the smoke evacuator will continue to run until it is turned off. Turning power off to the smoke evacuator will require replacement of the filter before subsequent use.

This device is not intended for the evacuation of fluid. If fluid is expected to be aspirated to the smoke evacuation filter, a fluid collection device must be installed with the vacuum hose assembly. Failure to install a fluid collection device could cause filter blockage and electrical damage. Contact Valleylab Service for additional information.

Caution

To maximize patient safety, the tubing or wand should not come in direct contact with tissue. Otherwise, patient injury may result.

1. Verify that all tubing is connected.
2. Turn on the smoke evacuator by pressing the power on switch (|) on the front panel. The smoke evacuator powers up with the fan motor off. The smoke evacuator is in standby mode which is indicated by a blinking LED in the center of the fan symbol.
3. Press the up-arrow (⚠+) button once to start suction at the lowest air-flow setting.

Minimizing Noise

The higher the power setting, the greater the noise. Minimize noise by using a lower power setting. Effectiveness of a lower power setting can be maximized by using a larger diameter tubing and/or positioning the tubing closer to the source of smoke.

Variables Affecting Airflow

The following factors may affect airflow:

- Diameter of the tubing—with larger diameter tubing, airflow improves
- Airflow settings
- Attachments

Changing the Airflow

You can change the airflow while the smoke evacuator is in use.

1. Adjust the air flow by pressing the up-arrow (+) to increase or the down-arrow (−) button to decrease.
2. Verify that the indicator illuminates for the speed setting you selected.

Periodic Checks

During surgery periodically check the accessories described below.

Tubing

Check for clogged, occluded, or kinked tubing during surgery.

Sponge Guard

If a sponge guard is in use, ensure it is fully attached to the sterile tubing to prevent suction of surgical materials.

Filter Life Indicator

Monitor the remaining life of the filter by viewing the Filter Life Indicator LEDs on the smoke evacuator front panel.

Chapter 5

After Surgery

This chapter covers the following topics:

- Preparing the smoke evacuator for reuse
- Cleaning the smoke evacuator

Preparing the RapidVac Smoke Evacuator for Reuse

After surgery, prepare the smoke evacuator for reuse by performing the following procedures:

- Remove the tubing
- Clean the smoke evacuator

Caution

Do not reuse or resterilize accessories labeled “disposable” or “single use only.”

Removing the Tubing

Warning

The tubing and filter capture potentially hazardous particles. When removed, handle as you would any biohazardous material. Dispose of these items with other operative waste materials according to the procedures for your institution.

1. Press the power switch (O) on the front panel to turn off the smoke evacuator.
2. If applicable, disconnect the tubing from any reusable instrument that will not be discarded with the tubing.
3. Disconnect the tubing from the smoke evacuator.

Cleaning the Smoke Evacuator

Warning

Always turn off and unplug the smoke evacuator before cleaning.

The tubing and filter capture potentially hazardous particles. When removed, handle as you would any biohazardous material. Dispose of these items with other operative waste materials according to the procedures for your institution.

Wear appropriate protective gear when cleaning the filter ports and covering flap to avoid coming in contact with incidental contaminants on these surfaces.

Notice

Do not rub, touch, or clean the smoke evacuator with alcohol or caustic, corrosive or abrasive cleaning or disinfectant compounds, solvents, or other materials that could scratch the control panel or damage the smoke evacuator.

Do not autoclave, pressure sterilize, or gas sterilize the smoke evacuator.

Keep the smoke evacuator away from liquids. Liquids that enter the smoke evacuator will damage internal components. Do not spray liquid cleaner into the filter ports.

1. Ensure that the power switch on the front panel is off (O).
2. Disconnect the power cord from the wall receptacle.

3. Disconnect tubing as directed in the previous section.
4. Thoroughly wipe all external surfaces with a mild detergent or disinfectant.
5. Thoroughly clean both sides of the flap covering the filter ports. Do not spray liquid cleaner into the filter ports.
6. Clean the surface around the filter ports. Do not spray liquid cleaner into the filter ports. Follow procedures approved by your institution, or use a validated infection-control procedure.

Warning

Wear protective gloves when cleaning around filter ports. Do not place fingers into ports or touch the internal surface of the ULPA filter. Contaminants may be present.

7. Ensure the smoke evacuator is completely dry before use.
8. Reconnect the power cord to the wall receptacle.

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Chapter 6

Troubleshooting

This chapter describes solutions to problems that may occur when operating the smoke evacuator.

If the smoke evacuator is not functioning properly, use the information in this section to help identify and correct the malfunction.

Inspecting the RapidVac Smoke Evacuator

If there is a problem with the operation of the smoke evacuator, inspect the unit for obvious conditions that can cause a malfunction:

- Check for visible signs of damage
- Verify the connections of all cables and tubing
- Verify proper filter installation
- Verify that the power switch is on and the power-on indicator LED in the center of the fan symbol is blinking.
- Check the filter life indicators to ensure the filter has available filter time remaining.

Correcting Specific Malfunctions

If a solution to the problem is not readily apparent, use the following table to help identify and correct specific malfunctions. After you correct the malfunction, verify that the smoke evacuator is in proper working order.

Situation	Possible Cause	Recommended Action
Smoke evacuator is on but there is minimal or no vacuum or airflow at the wand or tubing	Improperly installed ULPA filter	Ensure the ULPA filter is properly installed. Reposition if necessary.
	Clogged tubing	Unclog/replace the tubing.
	Clogged ULPA filter	Replace the filter.
	Obstructed or malfunctioning motor and/or blower	Contact Valleylab service for assistance.
Smoke evacuator does not adsorb odors	Charcoal component of the filter has expired	Replace the filter.
Smoke evacuator does not operate	Disconnected or faulty power cord	Check and correct the power cord connections. Check the cord for damage. Replace cord if needed.
	No power from wall receptacle (power cord is connected to wall receptacle, but Mode Indicator is not illuminated)	Check the power at the wall receptacle. Connect power cord to a functional wall receptacle.
	Power switch on the front panel is off (O)	Turn the power switch on (|).
	Fuses damaged	Check the fuses to see if they have burned through from being over loaded or otherwise damaged. Replace fuses if needed.

Situation	Possible Cause	Recommended Action
Footswitch does not activate smoke evacuator when Footswitch mode is selected	Improperly connected footswitch	Check that the footswitch is securely connected at the front of the smoke evacuator.
	Malfunctioning footswitch	Replace the footswitch.
	Incorrect footswitch connected to the smoke evacuator	Connect the RapidVac Footswitch (SEA3745) to the smoke evacuator.
	Filter incorrectly installed	Reinstall the filter. Ensure that the filter is fully seated in the smoke evacuator and the securing tab locks into place.
	Malfunction in the smoke evacuator	Contact Valleylab service.
Indicator LEDs do not illuminate	No electrical power	Refer to electrical utility maintenance.
	Fuses damaged	Check the fuses to see if they have burned through from being over loaded or otherwise damaged. Replace fuses if needed.
	Malfunction in the smoke evacuator	Contact Valleylab service.
Motor does not run, but Power On LED illuminates	Filter incorrectly installed	Reinstall the filter. Ensure the filter is fully seated in the smoke evacuator and the securing tab locks into place.
	Malfunction in smoke evacuator	Contact Valleylab service.
ESU remote does not activate when RapidVac mode is selected	Generator interlink cable incorrectly installed	Ensure the generator interlink is properly connected to the rear panel of the smoke evacuator and the Valleylab generator.
	Remote Switch Activator incorrectly installed	Ensure the Remote Switch Activator is connected to the rear of the smoke evacuator. *or* Check the ESU pencil lead installation on the electrosurgery sensor bobbin.
	ULPA filter incorrectly installed	Reinstall the filter. Ensure the filter is fully seated in the smoke evacuator and the securing tab locks into place.

Chapter 7

Maintenance and Repair

Refer to this chapter for information on:

- Routine maintenance
- The manufacturer’s responsibility
- Returning the smoke evacuator for service
- Service centers

Routine Maintenance

The RapidVac Smoke Evacuator requires very little maintenance. Periodically, you must check the power cord and replace the filter. Periodic inspections and performance tests are recommended by a qualified biomedical technician to ensure safe and efficient operation.

Checking the Power Cord

Inspect the power cord each time you use the smoke evacuator, or at intervals recommended by your institution. Make sure the power cord is in good working condition, without exposed wires, cracks, or frayed areas.

Removing the RapidVac Filter

The filter removes odorous gases and submicron particles from surgical smoke.

Important

If the Replace Filter indicator illuminates, remove and replace the filter. Failure to do so may reduce airflow and compromise the efficiency of the filter.

Warning

The ULPA filter captures potentially hazardous particles. Handle used filters as you would any biohazardous material. Dispose of filters with other operative waste materials according to the procedures for your institution.

1. Ensure that the smoke evacuator power switch on the front panel is off (O).
2. Depress the locking tab on the top edge of the filter and pull straight out of the smoke evacuator.
3. Dispose of the filter with other operative waste materials according to the procedures for your institution.

Responsibility of the Manufacturer

Valleylab is responsible for the safety, reliability, and performance of the smoke evacuator only under the following circumstances:

- Installation and setup procedures in this manual are followed.
- Readjustments, modifications, or repairs to the unit are carried out by persons authorized by Valleylab.
- The electrical installation of the relevant room complies with local codes and regulatory requirements, such as UL.
- The accessories are used in accordance with the Valleylab instructions for use.

For warranty information, refer to the Warranty at the beginning of this guide.

Obtaining a Return Authorization Number

Notice

For repairs, return the smoke evacuator to Valleylab.

Before you return the smoke evacuator, call the Valleylab Customer Service Department (1-800-255-8522) for a Return Authorization Number or call your Valleylab Representative for assistance.

Have the following information ready when you call:

- Hospital/clinic name/customer number
- Telephone number
- Department/address, city, state, and zip code
- Model number
- Serial number
- Description of the problem

Returning the Smoke Evacuator for Service

Follow this procedure when returning the smoke evacuator for service. Service center information is provided below.

1. Remove the filter and any attached tubing and fluid container.

Warning

The ULPA filter captures potentially hazardous particles. Handle used filters as you would any biohazardous material. Dispose of filters with other operative waste materials according to the procedures for your institution.

2. Clean the smoke evacuator thoroughly. Follow the procedures approved by your institution or use a validated infection control procedure.
3. Attach a tag to the smoke evacuator that includes the Return Authorization Number and the information listed above (i.e., hospital, phone number, etc.).
4. Be sure the smoke evacuator is completely dry. Then, package the smoke evacuator in its original shipping container, if available.
5. When you receive the Return Authorization Number, ship the smoke evacuator prepaid according to Valleylab's instructions.

Service Centers

For a complete list of service centers worldwide, please refer to the Valleylab website:

http://www.valleylab.com/valleylab/international/service-world.html

Chapter 8

Accessories

The accessories listed in this chapter are recommended for use with the RapidVac Smoke Evacuator. Accessories can be ordered through your Valleylab Sales Representative.

Product	Catalog No
RapidVac Filter	SEA3700
Tubing, 6 mm x 3 m (1/4 in x 10 ft), sterile	SEA3705
Tubing, 10 mm x 3 m (3/8 in x 10 ft), sterile	SEA3710
Tubing with Sponge Guard, 2 cm x 3 m (7/8 in x 10 ft), sterile	SEA3715
Laparoscopic Tubing Kit with Valve	SEA3720
Wand, Laser Resistant, 2 cm x 20 cm (7/8 in x 8 in)	SEA3725
Generator Interlink Cable	SEA3730
AccuVac Attachment with Tubing, 10 mm x 3 m (3/8 in x 10 ft)	SEA3735
RapidVac Remote Switch Activator	SEA3740
RapidVac Footswitch	SEA3745